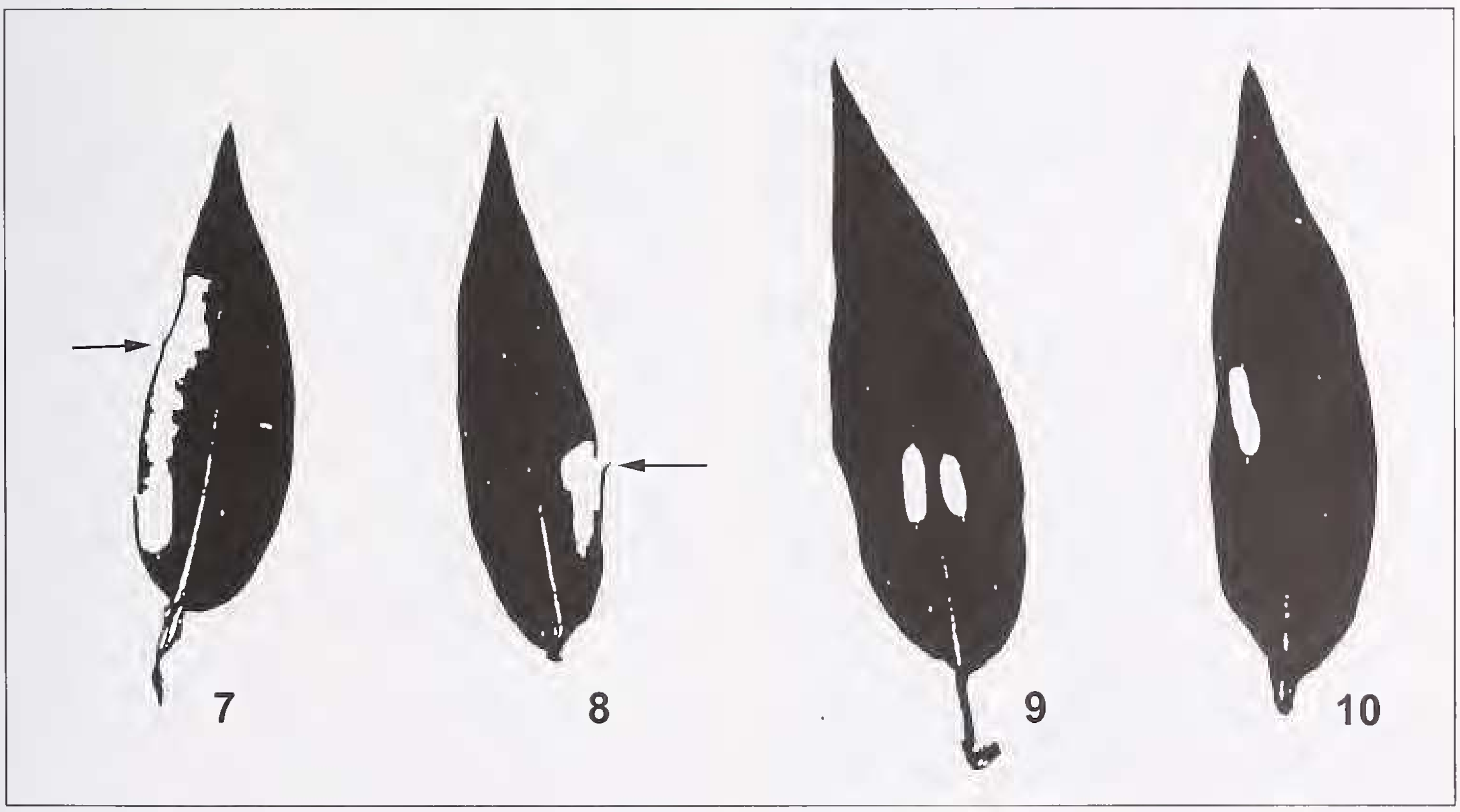
Fig. 5: Area a little away from the pond. A broad leaf *Commelina* weed is shown by an arrow. *L. coromandeliana* and related species occur mostly in such an area.

Fig. 6: Area at marshy edges of a pond with a rich growth of narrow leaf *Commelina*. *L. semifulva* complex occur mostly in such environs.

L. semifulva. The two species, which are products of synonymisation in this project, are obviously polymorphic. The various varieties, included in the two species, seem closely allied to *Lema praeusta* (Fabricius).

Lema praeusta (Fabricius), described under the name *Lema coromandeliana*, is widely distributed in the Oriental Region. It is known from Coromandel and Calcutta (India) (JACOBY 1908), Orissa and Tamilnadu (India) (TAKIZAWA 1983), Nepal (TAKIZAWA 1988), Kerala and Pondicherry (India) and Pakistan (TAKIZAWA 1990), Himachal and Bengal (India) (TAKIZAWA & BASU 1987) and Taiwan (KIMOTO & CHU 1996). Some other chrysomelids, with wide distribution, are also known to be polymorphic, e.g. *Aspidimorpha miliaris* Fabricius, widely distributed in the Oriental region



Figs. 7 & 8: Feeding pattern of *L. tibiella*. Note that fed away areas tend to be closer to margins, and often a thin thread like portion is left (see arrows) along the margin.

Figs. 9 & 10: Feeding pattern of *L. coromandeliana*. Note that eaten away areas tend to be less longish and situated deeper than in (7) and (8).

(MAULIK 1919). Another cassidine, *Conchyloctenia punctata* Fabricius, occurs throughout eastern, central and southern Africa, and is markedly polymorphic (HERON 1999).

It seems that, when a species is widely distributed, some populations, due to a temporary geographic isolation, acquire a new phenotype, and thus new varieties or phena are produced. Occurrence of two or more phena in the same locality is perhaps due to their subsequent migrations or dispersal. Support for these hypothetical suggestions may be found in distributional studies, which may reveal localised concentrations of phena.

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Non-volant Terrestrial Mammals on Mediterranean Islands: Tilos (Dodecanese, Greece), a Case Study

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Abstract. The late Quatermary native mammalian fauna of Tilos (Dodecanese, Greece) was not characterised by continental taxa, but differed considerably from contemporary continental wildlife. This study aims to investigate, for the first time, the present composition of non-volant terristrial mammals, also to determine any possible relationship with species previously reported from the island for the Late Pleistocene-Holocene chronology. Through direct observation, pellet analysis and trapping, the present research documents the presence of the following six species: *Erinaceus concolor, Crocidura suaveolens, Oryctolagus cuniculus, Apodemus mystacinus, Rattus rattus, Mus domesticus*. The occurrence of these continental mammals on the island seems to be linked essentially to the introduction by man during the Holocene.

Key words. Mediterranean mammals, Paleontology, Holocene, Biogeography

1. INTRODUCTION

Tilos is the seventh island of the Dodecanese archipelago (Greece), covering a surface area of 64,3 km^2 (Fig. 1). Situated between Rhodes and Kos, at about 20 km from the nearest point of the Turkish mainland, it reaches 687 m a.s.l. at its highest peak (DESIO 1923, 1928). Although the island lies only a few marine miles off the western Anatolian coast, in the late Quaternary its native mammalian fauna was not characterised by continental taxa, but differed considerably from contemporary continental wildlife. It was dominated by endemic dwarf elephants, described as belonging to the genus *Elephas* (SYMEONIDIS et al. 1973; THEODOROU 1983, 1988), but still unnamed (ALCOVER et al. 1998) (Fig. 2). These proboscideans have often been compared to *Elephas falconeri* Busk, 1867, a taxon described from Sicily and Malta (VAUFREY 1929; AMBROSETTI 1968). Previously referred to as two distinct forms, the endemic dwarf elephants of Tilos are now considered as belonging to a single species with marked dimorphism. The form is slightly larger than *E. falconeri*, whilst the age of the deposits of the discovery site ranges from the very late Pleistocene to the Holocene (SYMEONIDIS et al. 1973; BACHMAYER & SYMEONIDIS 1975; BACHMAYER et al. 1976; DERMITZAKIS & SONDAAR 1978; THEODOROU 1983, 1988). Indeed, some of these elephant remains are attributed to be very recent, between 7.090 +/– 680 and 4.390 +/– 600 bp (BACHMAYER & SYMEONIDIS 1975; BACHMAYER et al. 1976). These age determinations originate from a different place in the cave and are supposed to prove the simultaneous existence of the elephants and post-Palaeolithic man (BACHMAYER et al. 1984). Furthermore, if such dating is reliable, we can presume this taxon survived, at least until the

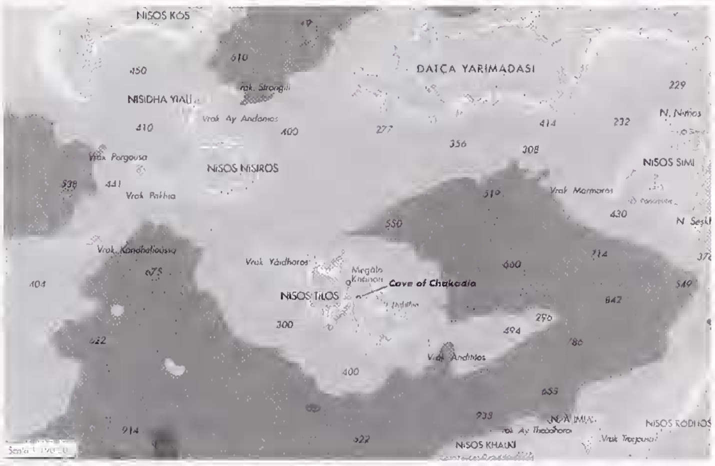

Fig. 1. The geographical location of the island of Tilos, in the southern Dodecanese archipelago (Greece).

Fig. 2. Artists reconstruction of the extinct dwarf elephant, *Elephas antiquus* cf. *falconeri* Busk, 1867, of Late Pleistocene-Holocene Tilos, adapted from the osteological material in the Museum of Megalochorio (Tilos), and compared to the size of its supposed ancestor *E. antiquus* Falconer & Cautley, 1847 (Drawing by A. Mangione).

Table 1: Holocene non-flying terrestrial wild mammals reported from the island of Tilos (Dodecanese, Greece).

Taxon	Charkadio Cave, (Late Pleistocene-Holocene fauna)	Charkadio Cave, sub-recent fauna	Present fauna
Erinaceus concolor			x[5]
Crocidura russula/suaveolens		x[1]	
Crocidura suaveolens			x[5]
*Oryctolagus cuniculus**			x[5]
Apodemus flavicollis/sylvaticus		x[1]	
Apodemus mystacinus		x[1]	x[5]
Rattus rattus			x[5]
Mus domesticus			x[5]
Vulpes vulpes		x[1]	
Ursus cf. *arctos***	x[2,3,4]		
Martes foina		x[1]	
Elephas antiquus cf. *falconeri*	x[2,3,4]		
Total 12	2	5	6

* Imported in very recent times (about 1997–98);
** Very probably hunter trophy.
References: 1 SYMEONIDIS et al. (1973); 2 BACHMAYER et al. (1976); 3 CALOI et al. (1986); 4 KOTSAKIS (1990); 5 MASSETI & SARÀ (present paper).

beginning of the Aegean Bronze Age. Except for one bat, *Myotis blythii* Tomes, 1857, so far no other micromammal remains have been found associated to the Telian dwarf elephants, whose stratigraphy also yielded *Testudo marginata* Schoeppf, 1795, and *Ursus arctos* L., 1758, the latter presumed to be a hunter trophy (Table 1). According to paleontological evidence, some representatives of the limited endemic mammalian fauna of Tilos could have survived much longer than on other Mediterranean islands, possibly thanks to the shelter afforded by the natural morphology of the island, particularly inhospitable and unsuitable for human settlement.

This study aims to investigate, for the first time, the present composition of non-volant terrestrial mammals of Tilos, also to determine any possible relationship with species reported from the island from the previous Late Pleistocene-Holocene chronology.

2. MATERIAL AND METHODS

2.1. Methods

Following two previous surveys in September 1997 and October 1998, we decided to make a study on the non-volant terrestrial mammals of Tilos from 19th to 26th September 1999 to integrate our findings. The study was carried out as follows:

A) review of all the previous knowledge of Telian mammals and their history;

B) direct observations of tracks, excrement and food remains;

C) search for roosts of owls (Strigiformes) and pellet analysis;

D) 9 live-trapping stations on 6 consecutive nights in various types of habitats on the island described below (Table 2), employing 50 plastic traps; 35 trip-traps (very similar to longworths) with a double compartment and 4,5 x 4 cm entrance hole, and 15 LOT, with a single compartment and 7,5 x 7,5 cm entrance hole. The collected material was preserved in 70% alcohol (caught specimens) or dried (pellet remains) and deposited in the theriological collection of the Zoology Museum, Department of Animal Biology, University of Palermo (MZUP).

The following index was applied to the trapping data: DAT% = [n individuals of species X/(n nights trapping x n traps of model j) x 100]

This equation expresses the relative frequency or activity density for each habitat (Pucek 1969). As the traps we used are selective, in our case the LOT traps caught animals the size of an *Apodemus* sp. and larger, whilst trip-trap-caught animals had the size of an *Apodemus* sp. and smaller (SARÀ & CASAMENTO 1992, CASAMENTO & SARÀ 1993); the DAT index was standardised as follows:

– n *Rattus*/(n nights x n LOTs);
– n *Apodemus*/ [n nights x (n LOTs + n trip-traps)];
– n *Crocidura*, *Mus*/(n nights x n trip-traps).

2.2. The natural environment of Tilos and sampled areas

The surface of the island is characterised by distinct mountainous masses and high coastal cliffs. Space suitable for agriculture today is limited to a few hectares in the so-called "Misarias" plane; the rest of the island is characterised by barren heights and rocks (KUTELAKIS 1983). In fact, in recent years, the number of inhabitants has dramatically declined to no more than estimated 300 citizens and consequently the traditional terraced agriculture has been almost totally abandoned (GAETHLICH & ZOGARIS 1999). At present, the vegetation is poor and scantly represented by low, thorny Mediterranean garigue (locally called *phrygana*), dominated by *Genista acanthoclada*, *Sarcopoterium*

Table 2: A total of 300 trap nights were performed in the 9 sample areas on the island of Tilos.

Sample area	Main habitat features	S.e. Trip-trap	S.e. LOT	S.e. Tot
Messarià 1	Open oak wood and grazing ground	20		20
Microchorio cross-road	Open oak wood and grazing ground		30	30
Charcadio	Open oak wood and low *Cistus* garigue	30		30
Messarià 2	Open oak wood and low *Cistus* garigue		15	15
Livadia NW	Suburban open field	10		10
Eristos cross-road	Suburban open field	85		85
Mount Amali	Closed garigue at 390 m. a.s.l.	30	45	75
Livadia SE	Closed garigue at 60 m. a.s.l.		10	10
Eristos beach	Wet field at *Arundo donax*	25		25
	Total sampling effort at Tilos	200	100	300

S.e. = sampling effort relative to trap model.

spinosum, *Daphne gnidium*, *Cistus parviflorus*, *Urginea maritima* together with some Labiatae such as *Thymus capitatus* and *Salvia* cf. *officinalis*. The specific composition of the garigue varies with slope and the impact of grazing by domestic livestocks, on a gradient ranging from an open, multi-specific structure with high rocky cover (e.g. in the SE Livadia sample area) to a closed, almost monotypic structure with fewer rocky outcrops (e.g. in the Mount Amalì sample area). In the Messarià plane and several valley floors, especially in the central areas of the island, mixed and open thermophilous oak stands occur (< 50% cover), especially in the marginal areas, characterised by secular trees about 6–10 metres high and garigue underwood. The dominating trees are *Quercus macrolepis* and *Pistacia terebinthus palaestinae.* Locally *Quercus coccifera*, *Ceratonia siliqua*, *Pistacia lentiscus*, *Olea europaea* var. *silvestris* and wild *Prunus dulcis* also occur in varying canopy densities. The underwood is low, providing continuous thick cover and characterised by *Cistus parviflorus*, *Salvia* cf. *officinalis*, *Pistacia lentiscus* and *Calicotome villosa* (e.g. in the Charkadio and Messarià 2 sample areas). Where the effects of grazing and human intervention are most evident, the underwood is higher (approximately 1–2 m), discontinuous (< 50% cover) and characterised by young vegetative or regressive states of the above-mentioned trees (e.g. in the Microchorio crossroad and Messarià 1 sample areas). In the immediate vicinity of the town centres, the land is used for vegetable plots, orchards or for grazing; here there is little arboreal cover and Compositae and Gramineae are typical (e.g. in the NW Livadia and Eristos crossroads sample areas). Finally, near the Eristos Beach is a low dune formation (e.g. Eristos beach sample area) flanked by patches of land characterised by *Arundo donax*, *Foeniculum vulgare*, *Vitex agnus-castus*, *Pancratium maritimum* and *Eryngium amethystinum*.

3. RESULTS

3.1. Records through direct observations

Erinaceus concolor Martin, 1838, found in the wooded plain of Messarià, confirming previous sightings (MASSETI 1999). An adult male, which had been run over, was found at the side of the road between Megalochorio and San Antonio. Several excrements attributable to this species were found in the Messarià 1, Messarià 2 and Microchorio crossroad sample areas.

Rattus rattus (L., 1758) the remains of bones attributable to this species were found near the Pandeleimon Monastery. An adult individual was seen during trap checks in the Eristos beach area (22nd September). Excrements and the remains of preyed snails were also found in the Charcadio and Mount Amalì areas.

Oryctolagus cuniculus (L., 1758), only recently imported (MASSETI 1999), for the present seems to be localised in the Messarià plain and in the entire central part of the island in the valley floors and in their surroundings. Excrements and traces of burrows have been found in all these places and several individuals have been sighted.

3.2. Indirect records

A *Tyto alba* roost was found a few hundred metres from the village centre of Livadia, in a garigue habitat. We collected 52 pellets from this roosting site which rendered 123 items of prey as well as the scarce remains of further 43 victims; giving a total of 166 quarries. The percentage of prey frequency is given in Table 3, identification was by comparison with material held in the Mammal collection of MZUP.

3.2. Trapping

The largest number of animals were caught in the Eristos crossroads site (7 out of 10), an area of human settlement. Table 4 gives the captures divided per sample area. Trapping rendered 10 micromammals belonging to 4 species (Table 5). Material from trapping and pellet analysis is described below and in Tables 3 and 5.

***Crocidura suaveolens* (Pallas, 1811).** Reference material. – 1 specimen in alcohol (ML137), remains of skull and mandibles equivalent to 47 specimens (TE928).

Measurements (mm) – ML137: ZW 59; CBL 185, and Table 5. TE928: ZW = 58,2“0,18; min-max = 53–61; n = 16; CBL = 175; n =1.

This is a rather small shrew, which was caught in a built-up area, typically exploited by the species. Dorsal colouring was pale hazelbeige and ventrally a dirty white. The underthroat was paler and the inside of the limbs darker, with no clear demarcation between the colour of the back and that below. The tip of the tail was clearly white. The external size and colour of the coat fall within the variability range for the species

Table 3: Species found in the Barn Owl pellets at Tilos.

	N	PNI%
Crocidura suaveolens	47	28,31
Mus domesticus	33	19,88
Apodemus mystacinus	43	25,90
Rattus rattus	24	14,46
Mammals Sub total	147	88,55
Aves	13	7,83
Laudakia stellio	1	0,60
Coleoptera	2	1,20
Orthoptera	3	1,81
Total	166	

Table 4: DAT index per species in the studied ecosystems of the island.

	C.suaveolens	R.rattus	M.domesticus	A.mystacinus
Open oak wood	0,00	4,44	0,00	0,00
Suburban open field	1,05	1,05	5,26	0,00
Garigue	0,00	0,00	0,00	1,82
Wet field	0,00	0,00	0,00	0,00
Total Tilos	0,50	1,00	2,50	1,00

Table 5: Main features and external biomctry of the specimens caught at Tilos.

	Code	Day capture	Trap position	Sex	Age	W	BL	TL
C. suaveolens	ML137	20/09/99	dry grass + stones	M	adult	5,50	69,00	41,80
M. domesticus	ML139	21/09/99	dry grass + olive tree	F	adult*	15,50	75,00	61,00
M. domesticus	ML140	22/09/99	dry grass + stones	F	subadult§	11,00	75,00	47, dock
M. domesticus	ML141	22/09/99	dry grass	F	adult**	11,50	74,00	60,00
M. domesticus	ML142	23/09/99	dry grass	F	adult**	11,50	78,00	62,00
M. domesticus	ML143	24/09/99	dry grass	F	adult	10,70	74,00	63,00
A. mystacinus	ML138	25/09/99	low bush + stones	F	subadult§	24,00	100,00	104,00
R. rattus		21/09/99	dry grass + stones	M	adult	nc	nc	nc
R. rattus		22/09/99	bush + stones	M	adult	nc	nc	nc
R. rattus		23/09/99	bush + stones	F	adult	nc	nc	nc

* = pregnant, with 5 embryos; ** in lactation; § vagina not perforated. W = Weight in grams; BL = snout-anus length in mm; TL = tail length in mm; EL = inner ear length; HFL = hindfoot length.

(Stone 1995; Vogel & Sofianidou 1996). On the contrary, the character of the white tail tip until now has only been reported for *C. sicula* (Vogel et al. 1989).

The skull of the caught individual and the material retrieved from the pellets were compared with specimens from the Isle of Elba, France, Crete, Rhodes. The condyle-basal length of the two entire skulls available measured less than 190 mm. This character, together with qualitative analysis, allowed them to be distinguished from *C. leucodon*, which also occurs on several of the Aegean Islands (Vogel & Sofianidou 1996). The zygomal width was similar to that for other Mediterranean populations of C. *suaveolens*; (Sarà & Zanca 1992). The skull had narrow, slender incisors and the second premolar slightly smaller than the third. From side view, the height of A2 and A3 is equal or sub-equal to the parastyle of P4. This is rounded above as reported by Vogel et al. (1989), but with a more rounded and marked cingulum. In occlusion, upper P4 and especially its hypoconal flange is more massive and robust compared to the other populations. The molars are also slightly larger and sub-rectangular, whilst the general characteristics and size of the mandibles are unique to the species (Niethammer & Krapp 1978). These differences would appear to be geographical variations and a more detailed study of the material is currently in progress.

***Mus domesticus* (Rutty, 1772).** Reference material: – 5 specimens in alcohol (ML139-143), remains of skulls and mandibles equivalent to 33 specimens (TE933).

Measurements (mm) – ML139-143: Table 5. TE933: L Upper diastema = 53,3“3,8; min-max = 49–60; n =11).

This was the most frequent species with a total of 5 specimens all caught within the human settlement of the Eristos crossroads area. We should underline that only females in the reproductive state were caught: these individuals exhibit a pale grey-beige upper part and dirty white-cream lower part. Lateral demarcation is not obvious nor clear-cut. Moreover, the tail is not clearly bicoloured but only slightly paler below; the feet are white. It should be noted that in all the animals, excluding the one with a docked tail, the tail is shorter than the body. This character, together with totally white feet, is considered one of the diagnostic features for the short-tailed mouse group, *Mus macedonicus* and its western counterpart, *Mus spretus*, (Marshall & Sage 1981). In this regard, it should be noted that in other, genetically tested Sicilian and circum-Sicilian insular populations of this group (Nachman et al. 1994) tail length is shorter than body length (Sarà, unpubl.). The number of palatine grooves always equalled 5, as in *M. domesticus* (Darviche & Orsini 1982). Furthermore, *M. macedonicus* has not yet been reported in human settlement areas (Ivantcheva & Cassaing 1996); therefore the capture site at Tilos is another datum which, together with pellet analysis, allows attribution to *Mus domesticus*. The skulls and the most complete mandibles were studied in depth and confirmed attribution of the material to the taxon *domesticus*, according to Marshall & Sage (1981) and Darviche & Orsini (1982). Posterior incisor profile varied, in 4 specimens smoothly bevelled and without a notch (as the A/B types of Darviche & Orsini 1982), in 5 decisely notched (as the E/F types of Darviche & Orsini 1982) and in 2 undetermined. The anterior margin of the zygomatic plate is quite square and rounded. The foramen nutricium of the zygomatic plate is absent in all specimens. However, this character need not be constant and diagnostic as occurs in the western Mediterranean Basin, in fact it is also absent in *M. domesticus* in Rhodes (n = 4) whilst in Sicily it proved missing in 33 % of cases (n = 15). Short-tailed mice are known to have longer and narrower muzzles. The upper diastema length in the *Mus* of Tilos is less than in those of Rhodes (56,7“2,5; min-max = 53–58; n = 4) and more or less equal to that of *M. domesticus* in Sicily (52,5“3,8; min-max = 44–56; n = 15). The upper arm of the zygomatic arch is narrower than the lower, as in *domesticus*, except in two cases. The anterior root of

Table 6: The qualitative distribution of mammalian species in the ecosystems of Tilos, as recorded by observations (O), trapping (T) and Owl pellets (P).

	E. concolor	*C. suaveolens*	*O. cuniculus*	*R. rattus*	*A. mystacinus*
Open oak woods	O	P?	O	O, T	P?
Garigue <300 m. a.s.l.		P	O	O, P	P
Garigue >300 m. a.s.l.				O	T
Suburban fields		T, P	O	O, T, P	
Wet field				O	

the first upper molar is always slanting, as in *domesticus*. Moreover, the dentition of the mandible resembles that of *M. domesticus*; the first lower molar is trilobate with the external tubercle hardly pronounced and the additional tubercle (C^1, according to DARVICHE & ORSINI 1982) lacking or minimum; whilst the second lower molar is stocky and square due to the presence of a marked external tubercle.

***Apodemus mystacinus* (Danford & Alston, 1877).** Reference material – 1 specimen in alcohol (ML138), remains of skulls and mandibles equivalent to 43 specimens (TE926).

Measurements (mm) – ML138: Table 5.

A single specimen was caught in the habitat typical of the species. This was a female which was already able for reproduction (perforated vagina), but whose body size was smaller than generally recorded for the species. The upper parts are pale grey with slight darker tones. The lower parts are very pale grey, almost white from the throat, with no yellow throat patch and clear-cut lateral demarcation with no shading. Large ears, pale legs, palm of posterior foot darker, tail clearly bicoloured and darker above.

The identification of the bone remains did not pose any particular problems, considering the size and diagnostic dental characters (e.g. 4 tubercles on the exterior edge of the 1st upper molar), which allowed to distinguish it immediately from the other species of *Apodemus* in the Aegean region (ÖZKAN & KRYSTUFEK 1999).

***Rattus rattus* (L., 1758).** Reference material: remains of skulls and mandibles equivalent to 24 specimens (TE932).

The three specimens caught exhibited the *alexandrinus* phenotype, with the lower parts a paler grey with no clear-cut lateral demarcation. There were no particular problems in identifying the material in this case, either.

4. DISCUSSION

The total trap index (DAT index = 3,3 %) was very low compared to previous experiences in late summer in other Mediterranean islands (cf. for example Ustica in July = 9,2 %; Pantelleria in September 5,3 % and 7,4 %) (SARÀ, unpubl.). Although the summer months are undoubtedly an unfavourable period for this type of study, the low trapping yield should nevertheless be noted. The analysis of owl pellets can furnish useful information on the ecology of micromammals through the estimate of the Barn owl terrestrial activity radius, which varies between 1,5 and 2,5 km (i.e. 7–20 km^2) (TABERLET 1983, 1986). Therefore, subsequent map interpretation will reveal the habitat frequented by the small animals taken as quarry. The hunting area of the Barn owl at Tilos, estimated by assuming the roost to be at the centre of its 2 km radius territory, corresponded to a 12,5 sq km yield area (including, however, 5,5 sq km of sea, which obviously cannot be considered). 78,6% of the area proved to consist of phrygana; 14,3 % mixed open oak stands and 7,1 % human settlements (town centre, fields, gardens, sheep pens). Therefore, the highest predation rate for the mammals recorded in Table 3 should have potentially occurred in the phrygana habitat. *M. domesticus* as well as *R. rattus* and *C. suaveolens* could all have been preyed in the urban and peri-urban environment, as reflected in the trapping data. However, the high trappability of *M. domesticus* in whatever island habitat, also confirmed at Tilos in the Eristos area, seems to give indication on the absence or at least scarce penetration of *M. domesticus* into the open oak woods and phrygana of Tilos.

The reported analyses of the mammalian fauna so far allow a preliminary division of the species present on the basis of the various ecosystems of the island (Table 6). Nevertheless, for the limited time of trapping in the island and for the known ecological niche enlargement occurring in insular mammals (cf. for example SPITZENBERGER 1978), the presence of *A. mystacinus* and *C. suaveolens* in the open oak woods cannot be excluded.

5. CONCLUDING REMARKS

With the exception of the red fox, *Vulpes vulpes* (L., 1758), and the Stone Marten, *Martes foina* (Erxleben, 1777), the extant terrestrial wild mammals of Tilos confirm the sub-recent fauna described by SPITZENBERGER (in SYMEONIDIS et al. 1973) (Table 1). Today, the non-volant terrestrial mammals of Tilos are almost exclusively characterised by eastern Mediterranean

Table 7: Insectivora, Lagomorpha and Rodentia of the southern Dodecanese archipelago (Greece).

Taxon	Kos	Astypalaia	Tilos	Rhodes	Karpathos
Erinaceus concolor	x[5, 6]		x[9]	x[1, 2, 3, 4]	
Crocidura spa.		x[7]			
Crocidura leucodon					x[8]
Crocidura suaveolens	x[5]		x[9]	x[1, 2, 3]	
Suncus etruscus	x[4, 5, 13]			x[1, 2, 3]	
Lepus europaeus	x[6]	x[6, 7, 14*]		x[2, 3, 6]	x[6]
Oryctolagus cuniculus	x[10]		x[9]		
Meriones tristrami	x[4, 5]				
Apodemus mystacinus	x[5, 12]		x[9]	x[1, 2, 3, 4, 12]	x[8, 12]
Apodemus sylvaticus	x[5]			x[1, 2, 4]	x[8]
Rattus norvegicus	x[5]				
Rattus rattus	x[5]	x[7]	x[9]	x[1, 2, 3, 4, 9]	x[8, 11]
Mus domesticus	x[5]	x[7]	x[9]	x[1, 2, 3, 4, 6, 9]	x[8, 11]
	11	3	6	8	6

* = probably extinct (no recent or reliable confirmation).

References: 1 ZIMMERMANN (1953); 2 VON WETTESTEIN (1941); FESTA (1914); 4 PIEPER (1965–66); 5 NIETHAMMER (1989); 6 DE BEAUX (1929); 7 ANGELICI et al. (1992); 8 PARAGAMIAN (1999); 9 Present work (original data); 10 GHIGI (1929); 11 ONDRIAS (1966); 12 NIETHAMMER & KRAPP (1978); 13 NIETHAMMER & KRAPP (1990); 14 DE BEAUX (1927).

continental taxa whose appearance on the island seems to be directly related to human activity. In fact, it can be stressed that neither the repertoire of the modern species can be traced in the Late Pleistocene-Early Holocene deposits (Table 1), nor does it seem likely that they reached the island by swimming, jumping onto floating logs or other so-called sweepstake routes (SOONDAR 1976; GROVES 1989; MASSETI & DARLAS 1999). It is not immediately apparent why man should have wanted to introduce some of the present day mammalian species onto the island. This phenomenon can only be explained considering each case individually. Synanthropic and commensal micromammals, such as the lesser white-toothed shrew, the house mouse, the rock mouse and the black rat, could well have been transported involuntarily by man, hidden within foodstuffs. Rabbits were introduced on Tilos for hunting over the last few years. Furthermore, from ethnozoological investigations it appears that hedgehogs have been used for food, against snakes or for other purposes from prehistoric times on (REYNIERS 1988; VIGNE 1988; MASSETI 1998). Evidence shows that the extant non-volant terrestrial wild mammals of Tilos are undoubtedly homogeneous in their continental composition and that they are more or less common to the present day fauna of several of the remaining Dodecanese islands (Table 7) and exhibit an eastern Mediterranean continental origin. The occurrence of these continental mammals on the island seems to be linked essentially to the introduction by man during the Holocene.

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